

CLAIMS

1. A method for network layer load balancing for a server farm system, wherein the server farm system comprises at least one router and two servers
5 connected to each other with a communication link,
characterised in that the method comprises the steps of:
configuring a service-specific anycast address to the server interfaces on the communication link;
10 sending from a server which is ready for offering the service an advertisement message to all nodes on the communication link, the advertisement message comprising at least the 'service-specific anycast address and the link-layer address of the server;
15 receiving one or more advertisement messages from the server(s) with the router;
updating the neighbour cache entry in the router based on the information of the advertisement message(s); and
20 sending service queries to the servers according to the information in the neighbour cache entry.
2. The method according to claim 1, characterised in that the advertisement message sending functionality in the servers is
25 activated by a solicitation message from the router.
3. The method according to claim 1 or 2, characterised in that said updating of the neighbour cache entry is done by changing the link-layer address of the neighbour cache entry to the
30 adverted link-layer address received in the advertisement message.
4. The method according to any of the claims 1 - 3, characterised in that the Neighbour Discovery protocol is used wherein said solicitation
35 message is a Neighbour Solicitation message and said advertisement message is an Unsolicited Neighbour Advertisement message where the override flag is set.

5. The method according to any of the claims
1 - 4, characterised in that the
advertisement message is discarded in a router:

if an entry for the target address does not exist;
5 or

if the neighbour cache entry is in a incomplete
state; or

if the target's link-layer address in the received
advertisement message is the same as the current link-
10 layer address in the neighbour cache entry.

6. The method according to any of the claims
1 - 5, characterised in that the method
comprises the steps of:

monitoring the advertisement messages on the link
15 and the service process in the server; and

delaying the sending of a new advertisement
message if necessary.

7. The method according to any of the claims
1 - 6, characterised in that if a server is
20 not receiving any service queries in a predefined time
interval:

stopping the sending of the advertisement
messages; and

switching to the standby mode.

25 8. The method according to claim 7,
characterised in that if a server being in
the standby mode receives a solicitation message, the
sending of the advertisement messages continues.

9. The method according to any of the claims
30 1 - 8, characterised in that when the service
process in a server stops, sending of the advertisement
messages is stopped.

10. The method according to claim 1,
characterised in that the OSPFv6 protocol is
35 used in the communication between the router and the
servers.

11. The method according to any of the claims 1 - 10, characterised in that the method comprises the step of:

5 sending an advertisement message with route cost values suitable for the current situation in the server.

12. The method according to claim 11, characterised in that increasing the route cost value if the server providing the service is getting congested.

13. The method according to claim 11, characterised in that decreasing the route cost value if the server providing the service has capacity for new service queries.

15 14. The method according to claim 1, 10, 11, 12 or 13, characterised in that the advertising message is an OSPFv6 Link State Advertisement message.

15. The method according to any of the claims 1 - 14, characterised in that method comprises the steps of:

recording all the advertisement messages with the router;

25 creating a cache for several link-layer addresses per neighbour cache entry; and

delivering the service queries to the servers in the cache in a predetermined way.

16. The method according to any of the claim 1 - 15, characterised in that the method comprises the step of:

30 sending an advertisement message with service load information.

17. The method according to any of the claims 1 - 16, characterised in that delivering the service load information of a server with a separate protocol.

18. The method according to any of the claims 1 - 17, characterised in that the service is the DNS service.

19. A server for network layer load
5 balancing, wherein the server is connected to a communication link with which it receives messages from a router or other servers, wherein the server comprises at least:

a service process (300) providing the service;
10 characterised in that the server comprises:

a service-specific anycast address configured to the server interface (314) on the communication link;
monitoring means (304) for monitoring said service
15 process (300) and the service-specific anycast address configured interface (314);

service scheduling means (306) for scheduling the service process (300) and the need for an advertisement message; and

20 sending means (308) for sending an advertisement message when the service process (300) is able to provide the service.

20. The server according to claim 19, characterised in that the server comprises
25 means (304) for enclosing a route cost value suitable for the current situation of the service process (300) in the server.

21. The server according to claim 19, characterised in that the server comprises
30 means (304) for enclosing service load information in the advertisement message.

22. The server according to any of the claims 19 - 21, characterised in that the service in the server is the DNS service.